

### AMENDMENTS TO THE CLAIMS

1. (Currently amended) A hydrophilic, cast polymer matrix, the matrix comprising a sulfone polymer, wherein the sulfone polymer is sulfonated in solution using a sulfonating acid solvent, wherein the sulfone polymer is selected from the group consisting of polyarylsulfone, polyarylethersulfone, and mixtures thereof, and wherein the matrix additionally comprises a substantially non-sulfonatable polymer selected from the group consisting of non-aryl polysulfone, non-aryl polyethersulfone, and mixtures thereof.

2. (Canceled)

3. (Currently amended) The matrix of claim ~~2~~ 1, the polyarylsulfone or polyarylethersulfone comprising a plurality of aromatic rings, wherein less than about one third of the rings are sulfonated.

4. (Canceled)

5. (Currently amended) The matrix of claim ~~4~~ 1, wherein the substantially non-sulfonatable polymer comprises up to about 90 wt. % of the polymer mixture.

6. (Canceled)

7. (Currently amended) The matrix of claim ~~4~~ 1, wherein the ~~non-sulfonatable polymer~~ matrix additionally comprises polyvinylpyrrolidone.

8. (Original) The matrix of claim 1, wherein the matrix is selected from the group consisting of a porous matrix, a non-porous matrix, and a membrane matrix.

9. (Original) The matrix of claim 8, wherein the matrix comprises a flat sheet.

10. (Original) The matrix of claim 9, wherein the sheet is from about 50 to 1000  $\mu\text{m}$  in thickness.

11. (Original) The matrix of claim 9, wherein the sheet is less than about 300  $\mu\text{m}$  in thickness.

12. (Original) The matrix of claim 11, wherein the sheet is less than about 100  $\mu\text{m}$  in thickness.

13. (Original) The matrix of claim 1, wherein the matrix comprises a membrane matrix having flow channels.

14. (Original) The matrix of claim 1, wherein the matrix comprises a membrane having a first surface and a second surface, each surface comprising pores therein, the membrane

further having a support region between the first and second surfaces, the support region having a plurality of flow channels therein, wherein the pores of the first surface and pores of the second surface are connected via the flow channels.

15. (Original) The matrix of claim 14, wherein the pores of at least one surface have an average diameter of between about 0.01 $\mu$ m and about 50 $\mu$ m.

16. (Original) The matrix of claim 14, wherein the support region comprises one or more structures selected from the group consisting of closed cell pores, open cell pores, macrovoids, finger structures, and mixtures thereof.

17. (Original) The matrix of claim 14, wherein the flow channels are substantially constant in diameter throughout the support region.

18. (Original) The matrix of claim 14, wherein the flow channels gradually increase or decrease in diameter through the support region in a direction from the first surface to the second surface.

19-42. (Canceled)

43. (New) The matrix of claim 1, wherein the matrix further comprises polyethyleneglycol.

44. (New) The matrix of claim 1, wherein the matrix further comprises poly-paraphenylene terephthalamide.

45. (New) The matrix of claim 1, wherein the matrix further comprises polyetherketone.

46. (New) The matrix of claim 15, wherein the matrix further comprises polyethyleneglycol.

47. (New) The matrix of claim 15, wherein the matrix further comprises poly-paraphenylene terephthalamide.

48. (New) The matrix of claim 15, wherein the matrix further comprises polyetherketone.